

UNITED STATES
v.
HOWARD S. McKENZIE

IBLA 70-94

Decided November 19, 1971

Mining Claims: Discovery: Generally

To prove that a discovery of a valuable mineral deposit has been made under the mining laws it is not necessary to show there is an actual profitable mining operation in existence; instead, there must be evidence of the quantity and quality of the mineral deposit within the claim which under known marketing conditions could be sold at a price which would justify reasonably expected costs of a mining operation so a prudent man would expect to develop a valuable mine.

Mining Claims: Contests -- Rules of Practice: Appeals: Burden of Proof -- Rules of Practice: Government Contests

In a mining contest when the Government has established a prima facie case that there has not been a discovery of a valuable mineral deposit within a mining claim, the claimant then has the burden of proof to show with a preponderance of the evidence that a discovery has been made.

Mining Claims: Discovery: Generally -- Rules of Practice: Evidence

In a mining contest, the Government may use an expert witness such as a qualified mining engineer, to establish its case and testify concerning the prudent man test of discovery.

Mining Claims: Determination of Validity -- Mining Claims: Discovery: Generally -- Mining Claims: Patent Improvements

An applicant for a mineral patent must maintain his mining claim in such a condition that the Government may examine his discovery points to verify the existence of the mineral deposit, and the Government's mineral examiner need not clean out or rehabilitate the claimant's discovery points or explore beyond the pits currently exposed.

Mining Claims: Determination of Validity -- Mining Claims: Discovery: Generally -- Mining Claims: Patent

A mineral patent application is properly rejected and the mining claims properly declared null and void where the

Government has shown that a prudent man could not expect to mine a deposit of barite profitably because the barite does not meet market standards, and the contestee's evidence fails to show that all the costs of the mining operation, including milling operations necessary to upgrade the mineral, if possible, to market standards and improvement of a road necessary to haul the material from the claims, would be justified by the expected returns of a reasonably estimated volume of mineral within the known extent of the deposit.

IBLA 70-94 : New Mexico Contest 246

UNITED STATES : Lode mining claims declared v.
: invalid; mineral patent application HOWARD S. McKENZIE : rejected
: Affirmed as modified

DECISION

Howard S. McKenzie has appealed to the Secretary of the Interior from a decision of the Chief, Branch of Mineral Appeals, Office of Appeals and Hearings, Bureau of Land Management, dated September 3, 1969, which affirmed a hearing examiner's decision of April 1, 1969, declaring his Landsend Nos. 2 and 3 lode mining claims invalid and rejecting his mineral patent application NM 145, for the claims.

These claims are situated in the N 1/2 NE 1/4 sec. 29, T. 12 N., R. 5 E., N.M.P.M., in the Placitas Mining District, Sandoval County, New Mexico, within the Cibola National Forest, and comprise 41.199 acres. They were located on September 11, 1962, by Carrie E. McKenzie, who conveyed them by quitclaim deed to her son, Howard S. McKenzie, on March 15, 1963. He filed application for a mineral patent to the claims on July 13, 1966, amended October 4, 1966.

Although appellant's amended patent application listed deposits of silver and lead, it is apparent that the value of the mineral deposit is based upon the existence of barite (BaSO_4), a whitish sulfate of barium. Appellant has not produced barite from the claims but proposes a mining operation for the barite for its primary marketable use as drilling mud for oil wells.

At the request of the Forest Service, a contest was brought against the claims on March 7, 1968, charging that:

- a. A valid mineral discovery as required by the mining laws of the United States does not exist within the limits of the Landsend Nos. 2 and 3 lode mining claims.

b. The land embraced within the said lode mining claims is nonmineral in character within the meaning of the mining laws.

The contestee timely filed an answer denying the allegations, and a hearing was held on October 10 and 11, 1968, at Albuquerque, New Mexico. The hearing examiner sustained the first charge, finding that a discovery of a valuable mineral had not been made within the limits of the locations, and declared the claims null and void. He found it unnecessary to rule on the second charge in view of the finding of lack of discovery. The Bureau affirmed his findings.

The governing principles of law here are clear. In order to obtain a patent to public land based upon a lode mining claim, a claimant must have made discovery and location of a vein or lode containing a valuable mineral deposit within the limits of the claim. 30 U.S.C. §§ 22, 23, 29 (1964). The essential elements requisite to a discovery of a valuable mineral deposit were defined by the Department in Castle v. Womble, 19 L.D. 455, 457 (1894), as follows:

[W]here minerals have been found and the evidence is of such a character that a person of ordinary prudence would be justified in the further expenditure of his labor and means, with a reasonable prospect of success, in developing a valuable mine, the requirements of the statute have been met.

Application of this test was specifically approved by the Supreme Court in Chrisman v. Miller, 197 U.S. 313 (1905); Cameron v. United States, 252 U.S. 450 (1920); Best v. Humboldt Placer Mining Co., 371 U.S. 334 (1963); and United States v. Coleman, 390 U.S. 599 (1968).

In applying the prudent man test, the hearing examiner emphasized the marketability test approved in United States v. Coleman, *supra*, as a logical complement to the test. The examiner stated that under the marketability test a material such as barite must be extracted, removed, and marketed at a profit before the substance may be considered a valuable mineral deposit. Although the Supreme Court in United States v. Coleman emphasized that profitability is important, it did not hold that such profitability must be proved by the existence of an actual ongoing profitable mining operation. The decision of the Office of Appeals and Hearings corrected the implication in the examiner's decision that such a showing would be essential to establish the discovery of a valuable mineral deposit. Proof of a profitable mining operation would, of course, be the best evidence of the existence

of a valuable mineral deposit. However, this Department and the courts have not required that such a stringent burden of proof be met. More than some mineralization must be shown, however. All facts which bear on the question of whether a mining venture might be profitable should be considered. Therefore, acceptable evidence of a valid discovery would show the existence of quantity and quality of mineral within the claim which under known marketing conditions could be sold at a price which would justify reasonably expected costs of the mining operation so that a prudent man could expect to develop a valuable mine. See Adams v. United States, 318 F.2d 861 (9th Cir. 1963).

When the Government institutes contest proceedings to have a claim declared invalid, it need only establish a prima facie case that no discovery of a valuable mineral deposit has been made within the limits of the claim; the burden of proof is then upon the claimant to overcome the Government's prima facie case by showing with a preponderance of the evidence that the requisite discovery has been made and that the claim is valid. Foster v. Seaton, 271 F.2d 836 (D.C. Cir. 1959); United States v. Wayne Winters d/b/a Piedras del Sol Mining Company, 78 I.D. 193 (1971).

Appellant contends generally that there is a valuable mineral deposit of barite within the claims, that the Government failed to sustain its burden of making a prima facie case of lack of discovery, and that he met his burden of showing sufficient quantity and quality of minerals to be extracted, removed, and marketed at a profit.

With respect to the Government's prima facie case, appellant contends specifically that the Government witness, Harve I. Ashby, a qualified mining engineer, was not competent to testify as to whether a prudent man, not necessarily a mining expert, would invest his labor and means in the claims. For this proposition he cites Chrisman v. Miller, supra; and Snyder v. Udall, 267 F. Supp. 110 (D.C. Colo. 1967), which relied on that decision. However, the District Court's ruling in Snyder was reversed in Udall v. Snyder, 405 F.2d 1179, 1180 (10th Cir. 1969), cert. denied, 396 U.S. 819 (1969), wherein the Court of Appeals for the 10th Circuit declared:

The Supreme Court [in United States v. Coleman, supra] now makes it plain to us that in the case at bar the Secretary applied the approved standard in determining that for want of a valuable mineral deposit no discovery had been made . . . ; that the administrative determination was binding upon the

court if supported by substantial evidence on the whole record; that the Government witnesses were competent to testify as experts with reference to the prudent man test, and that the Secretary's decision was supported by substantial evidence on the whole record. . . .

Chrisman v. Miller does not stand for the proposition that expert witnesses may not be used by the Government to ascertain whether the prudent man test of discovery has been satisfied. The logic of appellant's argument against the Government's use of an expert witness would apply with equal force against his own use of a qualified expert, Henry S. Birdseye, to testify concerning the prudent man test. However, the above ruling on appeal in Snyder makes it clear that the Government may use qualified experts to establish its case and testify concerning the prudent man test. See also, United States v. Wayne Winters, supra. It follows, of course, that the contestee may also use such expert testimony.

The next question is whether the testimony of the Government's witnesses and other evidence presented by the Government established a prima facie case. From our review of the record we find that there was sufficient evidence to justify a conclusion that there was not a discovery of a valuable mineral deposit within the claims. This should be apparent from our discussion of the evidence, infra.

The crucial question here is whether the contestee met his burden of proof by showing with a preponderance of the evidence that there was a discovery of a valuable mineral deposit within the meaning of the mining laws under the prudent man test as discussed above. The evidence presented by both parties has been discussed in considerable detail in the decisions below. The discussion in this decision will supplement that discussion and reemphasize certain facts in response to appellant's contentions.

The appeal decision of the Bureau of Land Management rested in large part upon findings that the barite within the claims could not be beneficiated to meet marketing specifications for drilling mud because it could not be economically separated from other constituent materials, particularly fluorspar, and that it had not been shown to exist in sufficient quantity to justify development. Appellant, however, contends that the barite may be sold as drilling mud and that a mining operation would be profitable.

Appellant has based his estimated returns from the sale of the barite upon a minimum price of \$23 per ton (Transcript (Tr.) 151, 152). This price is obtained from a quotation at page 24,

Engineering and Mining Journal, September 1968 (Contestee's Exhibit (Ex.) B), which gives a price of \$23 to 26 a ton for ground barite of drilling mud grade at 83-93% BaSO₄, 3-12% Fe, with a specific gravity of 4.20-4.30. The use of the barite for well drilling and its desirable specifications are further set forth in Contestee's Exhibit C at page 4 (Circular 76, New Mexico Bureau of Mines and Mineral Resources, Barite Deposits of New Mexico (1964), written by Frank E. Williams, P. V. Fillo, P. A. Bloom, United States Bureau of Mines):

. . . [I]n well drilling, barite increases the weight of drilling muds and improves their ability to restrain high gas or other fluid pressures encountered in rock formations, thus preventing blowouts (undesirable release of pressure at surface). For maximum weighting effect, the minimum specific gravity of an acceptable barite product is set at 4.2, which in turn calls for a minimum content of 92 per cent BaSO₄. The product must also be chemically inert under the conditions of use, free of soluble salts, and finely ground (90 per cent through a 325 mesh screen).

The Government presented a prima facie case through its expert witness, Mr. Ashby, that the barite within these claims will not meet the marketing standards for oil well drilling mud.

From his observations of the improvements on the claims, his sampling of exposures of barite, and sink-float concentrate and froth flotation tests of a composite of the samples, Ashby testified that the barite could not be economically upgraded to meet the market standards because it could not feasibly be separated from fluor spar (Tr. 58, 59). ^{1/} He also questioned the

^{1/} Ashby first inspected the claims on December 5, 1966, accompanied by other Forest Service employees, and took three samples, which upon assay produced values of barite ranging from 6.97 to 29.02 percent and of fluor spar from 22.35 to 38.08 percent (Contestant's Ex. 2, p. 1, Attachments 2.0, 3.0).

Ashby conducted a second inspection of the claims on May 19, 1967, this time accompanied by McKenzie, as well as by Forest Service personnel. Five more samples were collected. Ashby testified that these specimens were obtained where McKenzie advised him the best mineralization would be found (Contestant's Ex. 2,

feasibility of the mechanical extraction process proposed by appellant, and stated that the ore could practicably be removed only by cobbing and hand sorting (Tr. 18, 47, 48).

In addition to attempting to discredit Ashby because of his expertise, appellant contends that Ashby's conclusions regarding the barite content of the claims cannot be supported because when Ashby first examined the claims the pits were not cleaned out and he was not able to examine the mineral exposures adequately, and when the pits were cleaned out he didn't take further samples. The record shows that, after Ashby's first inspection, when three samples were collected, further sampling was suspended because of the poor conditions of the improvements of the claim until the pits

fn. 1 (Cont.)

p. 1; Attachments 2.0, 2.1; Tr. 30, 31). The five samples unearthed on this occasion showed values of barite ranging from 0.16 to 65.63 percent and of fluorspar from 7.50 to 24.86 percent (Contestant's Ex. 2, Attachment 3.1).

Inasmuch as no drilling had been performed on the claims, all samples collected for both contestant and contestee were obtained by channel sampling. Specimens of barite ore procured in this manner are classified as either vertical or horizontal, according to whether they are cut vertically or horizontally to the bedding plane. Of Ashby's eight samples, two were vertical and six horizontal. The horizontal samples showed values of barite ranging from 0.16 to 36.92 percent; the two vertical samples were assayed at 45.75 and 65.63 percent barite, respectively (Contestant's Ex. 2, Attachment 3.1).

A composite of the five samples collected on May 19, 1967, was prepared and submitted to Arizona Testing Laboratories, Phoenix, Arizona, for a sink-float test. Since the concentrate assayed at 71.15 percent barite (Contestant's Exhibit 2, Attachment 3.2), a value considerably below the 83.00 percent minimum required for marketable drilling mud, it was forwarded to ARC Laboratories, Phoenix, Arizona, for testing to separate the fluorspar from the barite through froth flotation. The fourth and final test performed, in which the concentrate was deslimed to minus - 325 mesh, showed a recovery of 65.30 percent barite in the flotation product and 74.60 percent in the tailings. ARC Laboratories concluded:

"On the basis of the tests conducted above according to the most effective procedures known for separation of fluorspar and barite we were not able to achieve an economical separation of fluorspar. Test # 3 indicated it might be done with increased amounts of reagents but was not confirmed by Test # 4. The production of fines by mechanical attrition in the flotation cell may be responsible for this."

should be cleaned out. After McKenzie was advised by letter to clean the pits so that they could be properly examined, Ashby again inspected the claims and took five more samples. McKenzie accompanied him. However, Ashby testified that even on this occasion the pits were not cleaned out well enough so that "I could take an accurate sample of the walls without doing a lot of work" (Tr. 25-28).

In September 1968, Ashby made two more visits to the claims. Although some of the pits had been plowed with a tractor, none had been deepened, and since he could detect no significant difference in the material exposed, Ashby considered further sampling to be unnecessary (Tr. 7-9). It should be noted that the three samples taken on Ashby's first visit, although assayed, were not represented in the composite sample analyzed for feasibility of barite separation (see note 1; Tr. 6; Contestee's Ex. 2, p. 6).

Appellant also contends that Ashby's samples are not representative of the deposit as a whole, since most of them were obtained by horizontal rather than vertical sampling, which Ashby conceded was the better method. However, Ashby testified that the condition of the pits prevented him from taking more than two vertical samples (Tr. 25), and gave his opinion that his eight samples were "representative of the actual mineral content of what has been exposed on the claim[s]" (Tr. 32). Because of appellant's repeated contentions on this point, we reemphasize that an applicant for a mineral patent must maintain his claim in such a condition that the Government may verify his allegations in his application that he has made a discovery of a valuable mineral deposit by examining his stated discovery points. Henrikson v. Udall, 229 F. Supp. 510 (D.C. Cal. 1964), aff'd 350 F.2d 949 (9th Cir. 1965), cert. denied, 380 U.S. 940 (1966). The mineral examiner need not clean out or rehabilitate the claimant's discovery points, nor is he required to explore beyond the pits currently exposed. No matter what the actual mineral content of the claim may be it is the responsibility of the claimant, not of the Government, to make discovery of the mineral deposit. United States v. Herbert H. Mullin, Pearl F. Mullin, C. A. Gussman, 2 IBLA 133 (1971); United States v. Hines Gilbert Mines Co., 1 IBLA 296 (1971); United States v. George J. Patee et al., A-28731 (May 7, 1962); United States v. Lem A. Houston et al., 66 I.D. 161 (1959).

To rebut the Government's case, appellant's expert witness, Birdseye, testified to his sampling and observations of the mineralization within the claims. His samples show values of barite generally corresponding with those of the two vertical samples taken by Ashby. 2/

2/ Birdseye inspected the claims on September 14 and 22, 1968. On the latter date he obtained four ore samples. One

Evidence submitted by the appellant that the barite can be practicably upgraded to meet marketing standards for drilling

fn. 2 (Cont.)

sample, a vertical, came from Landsend No. 2; two vertical samples and one horizontal were taken from Landsend No. 3. Two of the specimens, both vertical, were acquired from improvements previously sampled by Ashby. The single horizontal sample was assayed at 64.86% barite. Two of the vertical samples registered barite values of 48.14% and 61.25% respectively; the third vertical sample, the only one of Birdseye's specimens assayed for fluorspar, contained 69.52% barite and 13.69% fluorspar (Contestee's Exs. E, J; Tr. 73, 76).

Metallurgical tests of Birdseye's samples were performed under the direction of Dr. Roshan B. Bhappu of the New Mexico Institute of Mining and Technology, State Bureau of Mines and Mineral Resources, Socorro, New Mexico (Contestee's Ex. K). The purpose of the tests was to determine the feasibility of separation of barite from what was described as "siliceous gangue and minor amounts of calcite material." No specific mention was made of the presence of fluorspar. After the ores were crushed, the heavy (plus 10 mesh, or 1.65 mm.) fractions were subjected to a heavy-liquid separation procedure and were tested for specific gravities. The fine fractions were not tested. The results were summarized as indicating

"[T]hat about 62 to 84 percent of the total barite contained in the ore may be recovered by subjecting the coarse (plus 10-mesh) fraction to a gravity-concentration method, such as jigging. The specific gravities of the concentrates amounting to plus 4.4 is in excess of the one specified for barite concentrates (plus 4.25) and thus the products are more than suitable for marketing. It is estimated that [by] the treatment of the fine fraction (-10-mesh) by a suitable gravity concentration method such as spiraling or tabling, it may be possible to recover about 60 to 70 percent of the barite content contained in this fraction."

On the basis of a demonstrated 62 to 84 percent recovery of the barite contained in the coarse fractions of the ore samples, and an estimated 60 percent recovery from the fines of each sample, it was projected that, "using a dual gravity-concentration flowsheet (jigging for coarse and tabling or spiraling for fines)," the overall barite recovery would range from 73 to 90 percent. Froth flotation, the treatment to which the Government's samples were subjected (see note 1) was not employed, but the report estimated that over 90 percent of the barite in the fines could be recovered by this method, and stated that

". . . the flotation concentration of the fines or for that matter the entire ore may result in both high recoveries and acceptable

mud is disputed by the Government. The laboratory analyzing the composite sample submitted by the Government, after desliming the sample to the fineness required for drilling mud, and testing it using the froth concentrate method, reported (Contestant's Ex. 2, Attachment 3.3) that the barite could not be separated from fluorspar, a constituent mineral (see note 1). Although the metallurgical analysis report of Birdseye's samples (Contestee's Ex. K) concluded that about 62 to 84 percent of the barite may be recovered by a gravity concentration method (see note 2), this analysis was restricted to measurement of the barite in the coarse fraction of the ore tested. None of appellant's samples were crushed to the fineness necessary for drilling mud, nor were any subjected to flotation treatment. The results of the Government's actual tests, which indicated that froth flotation, considered by both laboratories to be the most effective method of barite separation, could not achieve an economical separation of barite from fluorspar, are not refuted by appellant's unsupported conjecture that flotation

fn. 2 (Cont.)

grades. This procedure is especially attractive since the marketing of barite concentrates as drilling-much [sic] necessitates grinding of the material to minus 325-mesh. Thus, flotation should be investigated as a possible concentrate method for treating these barite ores."

The report ends with the following qualification:

"These results and comments are indicative rather than conclusive and a more detailed testing program on the run-of-the-mine ore is recommended in determining the optimum flowsheet."

In addition to the specimens collected by Birdseye, appellant testified that in June 1968 he had personally extracted specimens of ore from six of the improvements on the two claims, which he had combined into an approximately 300 lb. sample. All of the ore comprised in the sample was cut horizontally. According to an unsigned handwritten statement purportedly by Dr. Bhappu, the material contained in the sample "runs about 70% Barite"; about 80-percent recovery could be anticipated using a jigging method (Tr. 202-204; Contestee's Ex. Z). The statement contains a rudimentary flowsheet, which McKenzie stated he had used as a guide in preparing the more detailed flowsheet he submitted to describe his projected milling and refining procedure (Tr. 206, 212-214, Contestee's Ex. Z). Relying upon this evidence, appellant at page 8 in his brief asserts that a "pilot test" was made "which has indicated that the claims can be economically developed . . ." Neither McKenzie's testimony nor the unsigned statement furnishes support for such a contention.

McKenzie also submitted an assay report, dated September 17, 1963, on a 30 lb. composite sample which had been extracted as part of his annual assessment work (Tr. 131-133; Contestee's Ex. N). The report shows a barite content of 67.28 percent. Apparently, no further metallurgical analysis of this sample was performed.

treatment would produce a barite recovery exceeding 90 percent. Moreover, it should be noted, only one of appellant's samples was assayed for fluorspar. In short, the preponderance of the evidence does not show that the barite can economically be beneficiated to meet the marketing standards for well drilling mud.

Even if we assume that the barite can be upgraded, the deposit must contain a sufficient quantity of the mineral to justify the extraction, beneficiation and other costs necessary to make a successful mining operation.

With respect to the total amount of barite in the claims, Ashby and Birdseye differed. Ashby estimated 26,000 tons of ore from the area generally where exposures had been made (Tr. 265). Birdseye submitted a sketch showing three of the five improvements on Landsend No. 2, and seven of the eight improvements on Landsend No. 3 (Contestee's Ex. E). To delimit the area of what he considered the measured reserves, Birdseye drew lines connecting the ends of the improvements, including three from which no samples had been extracted by either himself or Ashby (Improvement No. 5 on Landsend No. 2, from which one of Ashby's samples had been taken, was excluded from the sketch, presumably because it was comparatively remote from the other openings on the claim. The other two improvements omitted were so-called "discovery" pits which had not been sampled). Birdseye calculated the area delimited as 52,529 square feet. He arbitrarily assumed "the thickness of the barite-bearing limestone" to be ten feet, making a volume of 525,290 cubic feet, and estimated that 8.6 cubic feet of rock of the grade in the deposit would weigh a ton. By averaging the value of the three vertical samples which he had taken from the claims, he computed the barite content as 59.64 percent of the 61,080 tons of estimated ore lying in the area delimited, or 36,428 tons of barite. He testified that his calculations assumed a 100 percent recovery of the barite in the ore (Tr. 91-93, 111; Contestee's Ex. E).

In this appeal appellant contends that the claims contain 364,280 tons of barite. This belief is based solely upon Birdseye's conjecture that the portion delineated in his sketch is less than 10 percent of the total acreage of the claims (Tr. 112), and appellant's inference that a 59.64 percent barite mineralization prevails throughout the entire extent of the claims. The only evidence to support an inference that barite extends throughout the claims is the fact that one of the Government's samples was obtained from a pit outside the area sketched by Birdseye, and Birdseye's opinion that "the deposit is larger than has been exposed both vertically and horizontally" (Tr. 121). This is insufficient to justify a

finding that the barite content of the claims is substantially in excess of 36,428 tons. Other testimony by Birdseye establishes that a prudent man would take further steps to delineate the extent of the ore deposit in order to make an intelligent estimate of the quantity of ore that could be expected to be mined from the claims. For example, he suggested that the claimant would be wise to take more samples "before making any large financial commitments on his own" (Tr. 121). Furthermore, he advised that the extent to which the deposit had been exposed established

. . . a qualitative type determination or a preliminary for a quantitative determination. Chemical assays of carefully chosen samples would be necessary; to determine the boundaries of the deposit to thoroughly delineate it would require additional either trenching or drilling in areas extending away from the present area of trenches. (Tr. 106).

Conceding, arguendo, that McKenzie has established that his claims contain a deposit of 61,280 tons of ore, with a barite content averaging 59.64 percent, or 36,428 tons, which can be beneficiated so as to produce barite concentrate of a marketable grade, the question remains whether, on the basis of the cost figures submitted by appellant, a mining venture consisting of extracting, hauling, and milling barite from the claims can be profitably operated before the known deposit is exhausted.

McKenzie contemplates mining 75 tons of ore a day, from which he would produce and sell 50 tons of barite concentrate, or 15,000 tons in a year comprising 300 working days. His estimate shows the cost of plant and equipment, all of which would be obtained new, to be \$261,387. ^{3/} (Contestee's Exs. Q, R; Tr. 151, 152, 175, 176). At an average price of \$23 per ton, the minimum

^{3/} Contestee did not include in his tabulation of capital expenditures construction costs for a 5.2-mile road needed to transport ore from the claims to a projected mill site to be located on patented land near Placitas, New Mexico. McKenzie conjectured that such a road might cost \$10,000, or \$.07 per ton of concentrate sold if amortized over a ten-year period (Tr. 157, 158). A Government witness, however, estimated that a road capable of the heavy-duty hauling contemplated by McKenzie would, if built to Forest Service specifications, cost as much as \$128,600 (Tr. 274, 282). McKenzie stated that he had selected a 3.7 acre site for the mill, and had made arrangements to purchase it, but could give no estimate of its cost (Tr. 198, 199, 217). The

figure for drilling-well grade barite concentrate quoted in the Engineering and Mining Journal for September 1968 (Contestee's Ex. B, page 24), McKenzie projects an annual gross return from his operation of \$345,000. He predicts annual expenses of \$147,800, including amortization of plant and equipment computed on a five-year basis, direct operating costs of drilling, blasting, mining, hauling, and milling, and indirect and administrative costs, or approximately \$9.22 per ton of barite concentrate produced, leaving a profit of \$197,200 before taxes (Contestee's Ex. Q; Tr. 174).

The principal market in which McKenzie believes his product will be competitive is located in the oil fields of New Mexico, western Texas, and western Oklahoma. From 25 to 30 percent of the barite concentrate would be sold in New Mexico. McKenzie stated that he had negotiated for sale of his product with two prospective purchasers, one of whom had made him a firm offer (Tr. 149, 150).

Appellant's estimate that he will produce 50 tons of barite concentrate daily, from 75 tons of ore mined, assumes a barite content of 66 2/3 percent, all of which would be recovered and beneficiated. Such an assumption is unwarranted. As pointed out above, his own expert witness calculates the overall barite content of the claims to be 59.64 percent. According to Contestee's Exhibit P, a bulletin describing a barite concentrator of a type which appellant proposes to use to mill the ore, the proportion of the barite fed into the mill which would actually be beneficiated as concentrate would range from 60 to 70 percent.

Of 75 tons of ore of a barite content of 59.64 percent mined in one day, McKenzie estimates 44.73 tons would be barite. In a year consisting of 300 working days 13,419 tons of barite would be extracted. At this rate the 36,428 ton deposit would be depleted in less than three years. Operating at its maximum potential of 70 percent recovery, the milling operation can be expected to produce 31.31 tons of concentrate per day, or 9,393 tons in a year, less than 2/3 of the 15,000 tons anticipated by McKenzie. At \$23 per ton the finished concentrate of 9,393 tons would bring in an annual revenue of \$216,039.

fn. 3 (Cont.)

\$261,387 total is also exclusive of a cost of \$28,134.22 listed for a highway tractor-trailer, which McKenzie described as "not a part of the actual mining and milling. This is a service to deliver extra, at added compensation, the mill bagged product to the consumer at his expense" (Tr. 153).

Since the known deposit contains only enough barite for three years' production at most, appellant would have to amortize his \$261,387 in capital expenses within that period, rather than in the five years projected. Assuming that the expenses set forth in Contestee's Exhibits Q, R, and S reflect full five-year capitalization of plant and equipment 4/, at a rate of \$52,277 per year, the \$147,800 annual cost would have to be increased by \$34,852 to \$182,652 to account for amortization over a three-year period. With income of \$216,039 and costs of \$182,652 McKenzie might anticipate an annual profit of \$33,387, or a three-year income of \$100,161.

The figures quoted above, however, make no provision for interest charges on money borrowed to purchase plant and equipment, for the cost of land for a mill site, or for construction of a road from the claims to the mill site which would be suitable for travel by a heavy truck of the type needed to haul the ore. Without such a road, the proposed mining venture would be impracticable. At present, the claims can be reached only by a jeep trail. The estimate of a highway engineer who testified at length for the Government that the road, which would cross a portion of the Cibola National Forest between the claims and the mill site, would cost \$128,600 if built to Forest Service specifications (see note 3), is worthy of considerably more credence than McKenzie's testimony that he thinks it might cost about \$10,000. If we add the cost of the road alone, application of the Government's figure and amortization of the construction cost over the three-year maximum period of duration of the known deposit, result in a conversion of the contestee's anticipated annual net profit of \$33,387 to an annual loss of \$9,480, or a three-year loss of \$28,440. From the record it appears that contestee failed to include additional probable costs which would substantially increase the estimated net loss. 5/

4/ In Contestee's Exhibit Q, "Statement of Estimated Income and Expense," McKenzie estimated his annual "Direct costs of Drilling, Blasting, Mining, Hauling and Milling" at \$130,500, and "Indirect and Administrative Costs" at \$17,300. He testified that the total of \$147,800 includes both capital and operating costs (Tr. 153).

5/ Appellant's exhibits and oral testimony fail to make clear whether the \$185,465 estimate for a barite concentrator (listed in Contestee's Exhibit R as "Mill, complete incl. well and pump") includes the costs of grinding the concentrate to the fineness required for drilling mud, and of bagging the finished product. These processes are shown on appellant's flowsheet (Contestee's

Where the known facts, as shown here, demonstrate that an expected mining operation could not be profitable, a prudent man would not reasonably expend his money and time to invest in such an operation.

We must conclude on the basis of the present record that appellant has failed to meet his burden of showing with a preponderance of the evidence that the prudent man test can be satisfied. Therefore, the decisions below are sustained. In this connection, we want to reemphasize that the discussion relating to possible income and costs assumes a successful milling operation whereby the barite can feasibly be separated from other constituent materials and will meet marketing standards. However, as indicated above, appellant has failed to overcome the Government's case in this respect.

Appellant has filed a "Motion for Oral Argument". No useful purpose would be served by oral argument in this case; therefore, the motion is denied.

Appellant has also filed a "Motion for Taking Additional Testimony" on the ground that evidence previously unavailable has been obtained which would tend to show discovery on the claims. Without a more detailed offer of proof, and justification shown for granting a further hearing, there is not sufficient basis for granting this motion. Nevertheless, in the interest of affording appellant the opportunity to support his request for a further hearing

fn. 5 (Cont.)

Ex. O). The brochure prepared by Denver Equipment Company describing a concentrator of the type intended to be used (Contestee's Ex. P; Tr. 163, 188) states, however, that the product of the mill is hauled by truck to another site, where it is "dried and ground to drilling mud specifications (95% minus 325 mesh) in a Raymond Mill." No mention is made of the bagging process.

Another cost which McKenzie apparently has neglected to take into account is that of a power plant for the mill. The brochure indicates that the operator must supply his own power.

It should also be noted that although the laboratory which performed metallurgical analysis of appellant's samples predicted that froth flotation would produce barite recovery in excess of 90 percent (Contestee's Exhibit K), appellant selected a jigging-type concentrator with a recovery of 60 to 70 percent. To obtain a higher rate of recovery, the device would have to be supplemented by a separate flotation plant (Contestee's Exhibit P). The cost of such a plant is not included in contestee's cost estimates.

with additional reasons to show why a rehearing should be granted and, in light of our findings above, a more detailed offer of the evidence to be presented if a further hearing should be ordered, this decision will not become final until 30 days from date of service of this decision upon the appellant. 6/ Appellant may within that period, transmit to this office his additional reasons and offer of proof for a further hearing. In this event, this decision will be suspended pending final decision on his request. A copy of the supplemental motion and offer of proof must be served on the contestant in accordance with the Rules of Practice of this Department and the contestant will be allowed 30 days from the date of such service to respond. If the supplemental motion and offer of proof are not transmitted within the time allowed, the motion for taking additional testimony will be considered as rejected without further notice and this decision will become final.

Accordingly, pursuant to the authority delegated to the Board of Land Appeals by the Secretary of the Interior (211 DM 13.5; 35 F.R. 12081), the decision appealed from is affirmed with the modification provided in the preceding paragraph concerning appellant's request for a further hearing.

Joan B. Thompson, Member

We concur:

Anne Poindexter Lewis, Member

Frederick Fishman, Member.

6/ This action is taken only because of the particular circumstances in this case and is not to be deemed precedential.

